

USDA Forest Service - Southern Research Station - 320 Green Street, Athens GA 30602 - <http://www.srs.fs.usda.gov/disturbance>



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## Outreach Activities:

• Five organized groups totaling 53 people visited the Brender Demonstration Forest in January, including a group of US Fish and Wildlife Service employees discussing their response to the Katrina and Rita hurricanes and other natural disasters; loggers and timber buyers being trained on the required BMPs and the most efficient way to lay out and construct logging roads; GA Department of Natural Resources endangered species specialists and a representative from DNR parks looking at RCW clusters and habitat adjacent to their newly acquired tract which adjoins the Brender Forest; and the Wheeler Family from Macon. A total of 20 people came by the office for information and 104 people hiked the Hitchiti Interpretive Trail. Visitors came from as far away as Statesboro, GA.

• Scott Goodrick participated in Weather Week at Live Oak Morning School in Athens. He provided a pre-school class with fun activities for learning about wind while also answering student questions about thunderstorms, hurricanes, and tornados.

## Technology Transfer:



The Upland Team's is showing off the Appalachian site of the FFFS study..

• The Uplands Team co-sponsored a workshop with RWU NE-4153 entitled "Ecosystem Impacts of Fuel Reduction Techniques." The workshop was held in Asheville, NC; the agenda included oral presentations on the first day and a tour of the Southern Appalachian site of the National Fire and Fire Surrogate (NFFS) Study on the second day. Presentations were based on the results of the hardwood-dominated NFFS study sites in the South Carolina Piedmont, the Southern Appalachian Mountains, and the Ohio Hill Country. Presentations by RWU members included impacts to vegetation (Ross Phillips), fire behavior (Helen Mohr), litter decomposition and soil respiration (Mac Callaham), hardwood mortality (Tom Waldrop), fire behavior modeling (Ross Phillips), and the national interdisciplinary analyses (Tom Waldrop). Other presentations were made by numerous cooperators representing The Ohio State University, Ohio University,

North Carolina State University, the University of Georgia, Clemson University, SRS-4101, SRS-4201, and SRS-4505. The meeting was attended by approximately 80 managers and researchers from North Carolina, South Carolina, Tennessee, and Georgia. Tom Waldrop and Dan Yaussy (PL NE-4153) chaired the meeting with valuable planning assistance from Lynne Breland, Rick Reitz, and Pat Outcalt.



Susie Bennett, former student worker, is explaining her research poster. Great job, Dana and Susie.

• Dana Camp, student worker in Mac Callaham's lab, gave a poster presentation at the 12th Annual Ecology Student Symposium at the University of Georgia, Institute of Ecology. The poster was entitled "Native and exotic earthworm effects on C and N dynamics in a growth chamber experiment." The poster provided preliminary results from the project that Dana and Susie Bennett, former student worker, completed as



## Technology Transfer:

part of their NSF-funded Research Experience for Undergraduates program last summer.

- Dave Cleland gave an invited talk at the conference on “Prescribed Fire: Igniting Possibilities for Land Management” held in Wisconsin Dells, WI. The conference was hosted by the Lumberjack RC&D and the Wisconsin Prescribed Fire Council. The title of his presentation was “Fire History in the Great Lakes Region.”

- Yong Liu presented a poster entitled “A Physical Based Forest Fuel Moisture Scheme for High-Resolution Fire Modeling” at the 2006 Annual Meeting of American Meteorological Society, Atlanta, GA.

- Joe O’Brien gave an invited presentation at the 2nd Abaco Science Alliance Conference held in Marsh Harbour, Bahamas. Attendance at the conference was large; the audience of more than 200 people included Abaconian schoolchildren, teachers, and the science community. The 21 presentations on wide-ranging subjects included topics such as mechanisms behind the karst geology of the islands and the history of botanical exploration in the Bahamas. During a field trip



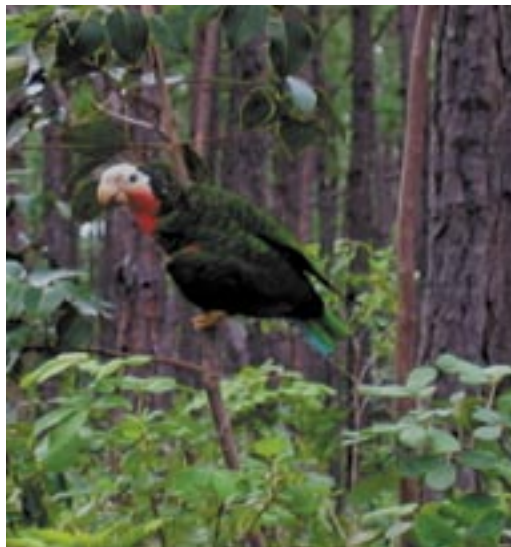
Photos from *The Abaconian*, January 15, 2006 of fossils of an extinct tortoise shell and the local sinkhole from which it was retrieved.



## Technology Transfer:

to a local sinkhole (a solution feature in the karstic bedrock), fossils of an extinct tortoise and extirpated crocodile were recovered. The Bahamian Minister of Health and Environment, Hon. Dr. Marcus Bethel gave the welcoming address and US Ambassador Rood introduced the scientific presentations. The intent of the conference was to both disseminate research results to the public and to foster collaboration among scientists working in the Bahamas. Joe gave the final presentation, “Direct and indirect effects of fire on Bahamian pine forest ecology.” He discussed the effects of fire on Bahamian Parrot nest cavities; direct effects were minimal but indirect effects on the ecosystem were critical because the parrot depends for nesting and feeding habitat on the fire-dependent pines. Joe also talked about how research can guide management and vice versa and gave an example of how fire and stand structure interact.

- January 24 was a significant day for the Smoke Management Team. One of the two new cluster computers that arrived shortly before the end of 2005 was configured, including installing the latest version of MM5. This computer will support the science application tasks of the Southern High Resolution Modeling Consortium.



During field work in Abaco National Park, a flock of endangered Bahama Parrots landed close to researchers Mac Callahan and Joe O’Brien. The birds were very interested in research work.

## Technology Transfer:

This new computer replaces FOXFIRE, the cluster computer that was built in-house by Tim Giddens and had been operational since 2003. As happens with computers that are subject to prolonged intense computational load, FOXFIRE was wearing out. FOXFIRE will be refurbished and become a research computer at the Athens Lab, along with the other new cluster.

- Kathryn Smith, Athens, will present a workshop on inclusion in recreation at the Experiential Education Conference, March 24th in Henderson, North Carolina. The workshop will focus on how to increase inclusion for persons with disabilities in environmental education programs.

- Joe O’Brien met with John Cox of the Georgia Forestry Commission and discussed the interaction of fire, resource competition and gaps in managing forest structure.



Out with the old and in with the new. The Smoke Management Team has just installed new cluster computers for MM5.



## Meetings/Reports:

• John Stanturf, Tom Waldrop, and Scott Goodrick attended a “kick-off” meeting for the cross-station Portfolio Teams designated for the Wildland Fire and Fuels R&D Strategic Program Area (SPA). This meeting offered an opportunity for the Washington Office SPA Leads (Sue Conrad, Mike Hilbruner, and Al Riebau) to brief all the teams, and to give the teams a chance to start their discussions and deliberations. Scott Goodrick and the Core Fire Science Portfolio Team continued to refine the team’s vision of what the overall objectives of core fire science research should be over the next ten years. Their emphasis areas are: developing a physics-based fire modeling system, integrating this new fire physics model into a revised Fire Danger Rating System, and improving our understanding of how the physical processes of fire scale in both space and time. The Environmental Science team met without their leader, Ed DePuit of the Pacific Northwest Station who had an appendectomy the previous weekend. Tom Waldrop represented SRS on this portfolio, and recognized that some team members were taking too narrow a view of their charge. This was resolved later with the Integrated Fire and Fuels Management Team, led by John Stanturf; the Environmental Science Team will be responsible for fire effects research. The Fire SPA portfolio teams will recommend relative priorities for FY ‘07 funding in their respective areas to the SPA leads. The portfolio teams are expected to play a more prominent role in developing the FY ‘08 budget, but the process has not been determined.

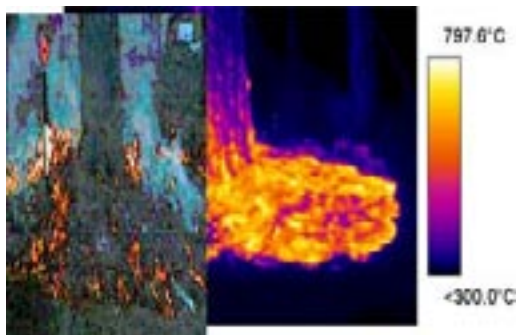
• Scott Goodrick attended the 3rd Southeastern Fire Season Assessment in Shepherdstown, WV and helped develop the outlook for the upcoming fire season. Drought conditions across Texas and Oklahoma have already resulted in much above normal fire activity and little relief is expected in the coming months. Sea surface temperatures in the Tropical Pacific Ocean are running cooler than normal, but not quite cold enough to be classified as a La Niña event. Persistence of La Niña-like conditions through the spring will bring drier than normal conditions across much of the southern tier of the country, Texas/Oklahoma and throughout the southern coastal plain.



Texas and Oklahoma are on fire this winter. Photo from Washington Post.

## Partnerships:

• Joe O’Brien began collaborating with Prof. Gregory Starr of the University of Florida School of Forest Resources and Conservation on his research on fire effects on carbon dynamics in intensively managed forests. They used the Unit’s FLIR infrared camera to measure fire temperatures during an experimental fire where carbon fluxes were monitored, conducted on the Austin Cary Memorial Forest near Gainesville. They intend to analyze how fire temperature and carbon balance are related and also monitor post-fire mortality.



The images above display results of video image analysis of longleaf pine bole temperatures during the experimental fire.

• As a result of the Abaco Science Conference, Joe O’Brien is exploring collaborations with Joseph Wunderle of the International Institute of Tropical Forestry and Charles Kwit of Miami University of Ohio on disturbance effects on Kirtland’s warbler winter habitat use.



Kirtland’s warbler (Photo by US Forest Service.)

## Funding:

• Mac Callahan and co-PI Liam Heneghan (DePaul University) submitted a proposal to the National Research Initiative (USDA CSREES) Soil Processes Program for funds to host an international workshop “Returning Soils To Restoration Ecology: A Conference to Promote Soil Ecology in the Practice of Restoration.” If selected, the grant will provide start-up funding of \$11,360.

## Visitors:

• Ms. Heidi Bigler-Cole, Research Social Scientist with the Pacific Northwest Research Station in La Grande, Oregon, visited the unit and gave an informal seminar on “Fuel reduction science and social science: a symbiotic relationship?”

• Ed Dickerhoof, Washington Office Resource Valuation and Use Research Staff, visited Alex Clark and John Stanturf to bring Ed up-to-date on the wood quality research. With the retirement of Howard Rosen, Ed has taken on responsibility for this area of research

## Personnel News:

Maybe it’s the proximity of Valentine’s Day in February. Or maybe it was the last full moon. Anyway, we have several upcoming nuptials to announce.

• Kathryn Smith announced she will wed Rua Mordecai-Stob on March 14th.

• Kevin Leftwich announced he will wed Leanne Morrow on May 20th.

• Gayle Gilmore announced she will wed Russell Gilbert on August 26th.



Congratulations from the unit to each couple.



Utami DiCosty, volunteer and wife of Athens scientist Ralph DiCosty, helped with the cleanup and installation of the Soil Chemistry Lab.





The regional and global carbon cycles have emerged as an important field in ecosystem research in the past two decades because of their role in the greenhouse effect and possible global warming. Wildland fire, including uncontrolled wildfire and prescribed burning, is one of the critical processes in the regional and global carbon cycle. Emissions from wildland fire directly affect the carbon cycle by increasing atmospheric CO<sub>2</sub>. Major fires can have a dramatic impact; for example, the 1997 Indonesian fires emitted as much carbon into the atmosphere as all the living things on the planet remove from it in a year, which about equals the annual carbon emissions from burning fossil fuel in Europe. Wildland fire also affects the carbon cycle in less direct fashion, by altering the uptake of carbon by terrestrial ecosystems. Biomass accumulates by consuming atmospheric carbon through photosynthesis. Terrestrial ecosystems thus are sinks for carbon and fire disturbance alters the magnitude of the sink.

We've looked at wildland fire and CO<sub>2</sub> emissions, trying to understand the role of wildland fire in the carbon cycle over the U.S. Unfortunately, the data needed to examine all wildland fires simply are not available and the quality of the existing data seriously underestimate the amount of wildland fire in the South. Nevertheless, we used available fire and meteorological datasets to provide at least an idea of the current emissions and potential effects of climate change. The available datasets included historical U.S. wildfires on public land during 1980-2002 (obtained from the USDA Forest Service and other federal agencies) and temperature and precipitation in each of the contiguous U.S. states (obtained from NOAA). Because of the truncated data on fire (only wildfires on public land; no data for prescribed burning or wildfires on private land), these results provide an incomplete picture. Fire emissions of CO<sub>2</sub> were estimated from area burned, effective fuel consumption, and emission factors. The potential impact of the greenhouse effect on wildfire CO<sub>2</sub> emission on public land was analyzed based on climate change projected by the Hadley Center's Second Generation Coupled Ocean-Atmosphere GCM (HadCM2).

We found that current wildfires on public land release over 10 tons km<sup>-2</sup> of CO<sub>2</sub> annually in the West and Southeast (Fig.1). The emissions vary remarkably from one year to another with large amounts found in 1988, 1996, 2000, and 2002. The region-integrated annual emissions are significant in the Inter-Mountain, Pacific South, Pacific North, and Southeast regions. Emissions are dominant in summer in the West except the Southwest region, where emissions in spring are also important. Springtime emissions are also important in the East. Summer emissions account for about 80% of annual amount nationwide. The HadCM2 model projects an increase in summer temperature by 1~1.5°C and an increase in summer rainfall by up to 8 mm in most U.S. regions by 2050 due to the greenhouse effect. The change in temperature would increase CO<sub>2</sub> emissions of wildfire on public lands and the increased rainfall would decrease the emissions, but overall the change in temperature plays the more important role. The projected climate change would lead to a relative increase of emissions by nearly 150% in the Southwest and 100% in the North (Fig.2). Nationally, the relative increase is about 50%.

This study suggests a substantial increase in future U.S. wildfire activities on public land due to the projected climate change induced by the greenhouse effect. The contribution of the wildfire emissions to atmospheric CO<sub>2</sub> concentration accordingly would become more important. A further caveat is the model does not take into account potential vegetation type changes in response to climate change.

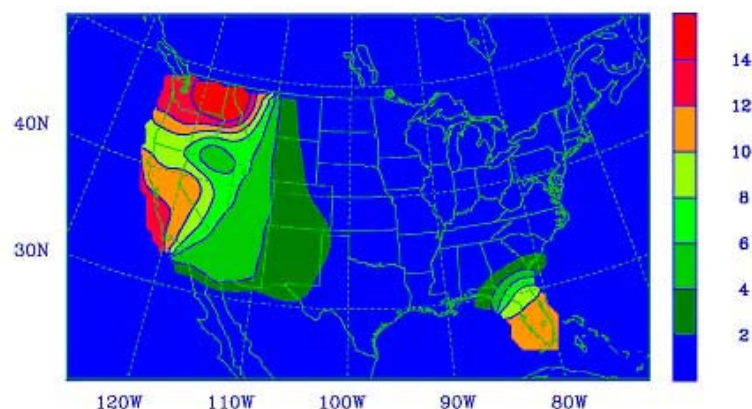


Fig.1 Annual CO<sub>2</sub> emissions from wildfires on public land (ton km<sup>-2</sup>).

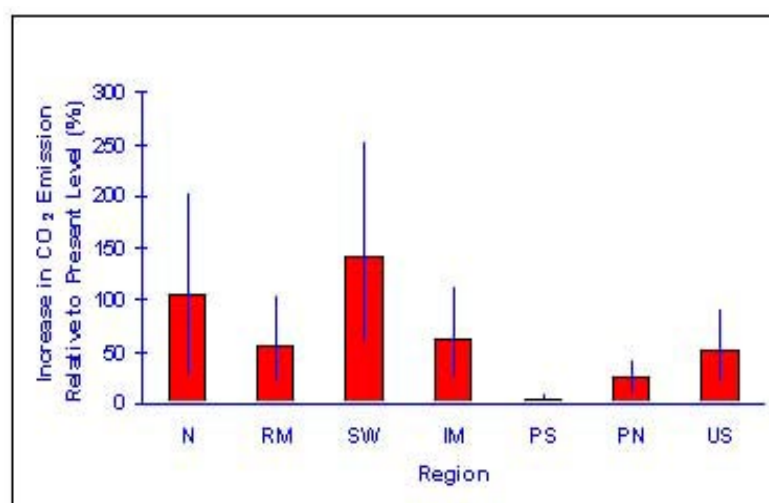


Fig. 2 Relative regional increases by 2050 over the current level of summer CO<sub>2</sub> emissions from wildfires on public lands due to climate change induced by the greenhouse effect. The columns and vertical lines represent the averages and uncertainty ranges, respectively.



## News from Around the Region:

• Tom Quigley, Director of the Pacific Northwest Research Station, will retire effective February 3, 2006.

• Brian Potter, Research Meteorologist in the North Central Research Station, is moving to the Pacific Northwest Research Station.



• The Estonian Agricultural University has changed its name to “Maaülikool” (Estonian University of Life Sciences). Several of the professors and graduate students in the Faculty of Forestry have collaborated with unit staff, including the Vice-Rector of Studies, Prof. Hardi Tullus.

• Potlatch Forest Products Corporation is constructing an on-site sawmill to manufacture hardwood lumber products from hybrid poplar trees harvested from the company’s 17,000-acre poplar plantation near Boardman, Oregon. The \$8.1-million project, which will include equipment to produce green hardwood lumber from poplar logs, is expected to be in operation by December 2006. Once completed, the sawmill is expected to produce an estimated 30 million board feet of green hardwood lumber and employ 55 at the Boardman site. The Boardman facility was initially developed with sequential annual plantings of poplar trees, beginning in 1993. Computerized drip irrigation conserves water and delivers nutrients to the poplar trees, which are managed on 11-year rotations and cultured to produce clear, high-quality hardwood for lumber.

• The Forest Products Laboratory will undergo significant restructuring and downsizing in order to refocus research into emerging areas of forest biorefinery, nanotechnology, advanced housing systems, improved engineered wood products and composites, and the use of wood in non-residential construction. Specifically, FPL will consolidate its current 17 research work units (RWUs) into 7: Economics and Statistics Research, combining Statistical Methods and Timber Demand and Technology Assessment units; Engineered Properties and Structures, combining the Center for Wood Anatomy Research and Engineered Properties and Structures units and part of the Condition Assessment and Rehabilitation of Structures unit; Durability and Wood Protection Research, combining the remaining portion of the Condition Assessment and Rehabilitation of Structures unit with the Building Moisture and Durability, Wood Preservation, and Fire Safety units; Composites Sciences Research, formerly Performance Engineered Composites; Forest Materials Modification Research, combining Wood Adhesives Sciences and Technology, Wood Surface Chemistry, and Modified Lignocellulosic Materials units; Fiber and Chemical Sciences Research, combining the Chemistry and Pulp and Fiber Processing and Paper Performance units; Institute for Microbial and Biochemical Sciences, comprising the Biodeterioration of Wood and the Institute for Microbial and Biochemical Technology units. The Center for Forest Mycology Research will remain located at FPL but will be reassigned to the Northern Research Station. The Engineering Mechanics and Remote Sensing Laboratory, Analytical Chemistry and Microscopy Laboratory, and Paper Test Laboratory will continue to provide technical support to the research units.



## Publications

**FY 2006 Publications** (\* denotes new publication this month)

### *Refereed Journals and Book Chapters*

**Jordan, L.**, Daniels, R.F., **Clark, A. III**, He, R. 2005. Multilevel nonlinear mixed-effects models for the modeling of earlywood and latewood microfibril angle. *Forest Science* 51(4): 357-371.

**Liu, Y.-Q.** 2005. Atmospheric response and feedback to radiative forcing from biomass burning in tropical South America. *Agricultural and Forest Meteorology*. 133, 40-53.

**Liu, Y.-Q.** 2005. Land breeze and thermals: A scale threshold to distinguish their effects. *Advances in Atmospheric Science*, Vol. 22, No. 6, 889-902

**Liu, Y.-Q.**, Fu, R., Dickinson, R. 2005. Smoke aerosols altering South American monsoon. *Bulletin American Meteorological Society* 86(8): 1062-1063.

**Liu, Y.-Q.**, Avissar, R. 2005. Modeling of the global water cycle - analytical models. In M. G. Anderson, Ed. *Encyclopedia of Hydrological Sciences*. John Wiley & Sons, pp. 3456.

Logan, S.R., **Edwards, M.B.**, Shiver, B.D. 2005. Survival and growth of seed trees 20 years after a natural regeneration cut in the Piedmont of Georgia. *Southern Journal of Applied Forestry* 29(4): 173-178.

Qu, J., Hao, X., Yang, R., Sommers, W., Dasgupta, S., Bhoi, S., Kafatos, M., **Liu, Y.-Q.**, **Achtemeier, G.**, Riebau, A.R., Coronado, P. 2005. Bridging Earth observations: remote sensing measurements, fire modeling, and air quality decision support system in the eastern United States. *Earth Observation Magazine* 14 (6).

**Reitz, R.** 2005. Forests and people: The symbiotic relationship. Pp. 89-93 *In American Perspectives on the Wildland/Urban Interface*. The National Wildland/Urban Interface Fire Program; 113 p.

Rhy, Soung-Ryoul, Chen, Jiquan, Crow, Thomas R., **Saunders, Sari. C.** 2004. Available fuel dynamics in nine contrasting forest ecosystems in North America. *Environmental Management* Vol. 33, Supplement 1, pp. 87-107.

**Saunders, S.C.**, J. Chen, T.D. Drummer, E.J. Gustafson, and K.D. Brosofske. 2005. Identifying scales of pattern in ecological data: A comparison of lacunarity, spectral and wavelet analyses. *Ecological Complexity* 2: 87-105.

**Schulte, Lisa A.** and Mladenoff, David J. 2005. Severe wind and fire regimes in northern forests: Historical variability at the regional scale. *Ecology*, 86(2): 431-445.

Varner, J.M. III, Gordon, D.R., Putz, F.E., Hiers, J.K. 2005. Restoring fire to long unburned *Pinus palustris* ecosystems: Novel fire effects and consequences for long-unburned ecosystems. *Restoration Ecology* 13(3): 536-544. (Unit funded under agreement #02-1A-11330136-030; funding source Joint Fire Sciences Program)

### Proceedings and Reports

Brockway, D.G., **Outcalt, K.W.**, Tomczak, D.J., Johnson, E.E. 2005. Restoration of longleaf ecosystems. USDA Forest Service Southern Research Station General Technical Report SRS-83, Asheville, NC; 34 pp.

**Cleland, David**, Crow, Thomas, Saunders, Sari, Maclean, Ann, Dickmann, Donald. 2005. Characterizing historic and contemporary fire regimes in the Lake States. Final Report to the Joint Fire Science Program. 81 pp.

**Kennard, D, Fowler, C. T.**, Hubbard, W. and Rauscher, M. 2005. The Encyclopedia of Southern Fire Science. In: Kush, J.S., comp., *Longleaf Pine: Making Dollars and Sense*, Proceedings Fifth Longleaf Alliance Regional Conference, 2004 October 12-15, Hattiesburg, MS, Longleaf Alliance Report No. 8: 97-100. (SRS-4104-6009)

**Liu, Y.-Q.** 2005. Spatial relationships between SST and U.S. Wildfires, *Proceedings of the Sixth Fire and Forest Meteorology Symposium*, 25-27 October 2005, Canmore, AB, Canada, Paper 6.2, P1-6 (available in CD). [http://ams.confex.com/ams/6FireJoint/techprogram/programeexpanded\\_302.htm](http://ams.confex.com/ams/6FireJoint/techprogram/programeexpanded_302.htm)

**Outcalt, K.W.** 2005. Restoring structure and composition of longleaf pine ecosystems of the Gulf Coastal Plain. In: Kush, J.S., comp., *Longleaf Pine: Making Dollars and Sense*, Proceedings Fifth Longleaf Alliance Regional Conference, 2004 October 12-15, Hattiesburg, MS, Longleaf Alliance Report No. 8: 97-100. (SRS-4104-6009)

**Outcalt, K.W.** 2005. National Fire and Fire Surrogate Study, 7th Annual SMIC Meeting and Field Trip. October 2005. Solon Dixon Forestry and Education Center, Andalusia, AL [Report]

**Outcalt, K.W.** 2005. National Fire and Fire Surrogate Study, Fuels Treatment Workshop and Field Trip. October 2005. Solon Dixon Forestry and Education Center, Andalusia, AL [Report]

Schoenholtz, S.H., **Stanturf, J.A.**, Allen, J.A., Schweitzer, C.J. 2005. Afforestation of agricultural lands in the Lower Mississippi Alluvial Valley: The state of our understanding. pp. 413-432. In L.H. Fredrickson, S.L. King, and R. M. Kaminski, eds. *Ecology and Management of Bottomland Hardwood Systems: The State of our Understanding*. University of Missouri-Columbia. Gaylord Memorial Laboratory Special Publication No. 10. Puxico, MO.

### Other Publications

**Goodrick, S. Stanturf, J., Sullivan, F., Outcalt, P., Gillmore, G., McCracken, R., Mundy, E.** 2005. Biennial Southern Silvicultural Research Conference Proceedings 1-12, 1980-2003. Archive and bibliography on CD-ROM.

**Outcalt, K.W.** 2005. Prescribed Burning Research in the Piedmont of Georgia. Demonstration Forest Project Hitchiti Experiment Forest, Jarrell, GA. [3-Panel Outdoor Display]

**Outcalt, K.W.** 2005. Prescribed Burning Research on the Hitchiti Experiment Forest. Demonstration Forest Project Hitchiti Experiment Forest, Jarrell, GA. [Information Card]

**Outcalt, K.W.** 2005. Long-term Dormant-Season Burning Study Located in the Palmetto/Gallberry Fuel Complex. Demonstration Forest Project Osecola National Forest, Olustee, FL. [Outdoor Display]

**Outcalt, K.W.** 2005. We can't keep fire out of these woods. We can only choose between prescribed burns or wildfire. Demonstration Forest Project Osecola National Forest, Olustee, FL. [Outdoor Display]

**Outcalt, K.W.** 2005. We can't keep fire out of these woods. We can only choose between prescribed burns or wildfire. Demonstration Forest Project Osecola National Forest, Olustee, FL. [Information Card]

**Outcalt, K.W.** 2005. Fire and Fire Surrogate Study in the Gulf Coastal Plain. October 2005 Solon Dixon Forestry and Education Center, Andalusia, AL [Bookmark]

**Outcalt, K.W.** 2005. Fire and Fire Surrogate Study in the Southern Coastal Plain. October 2005 Myakka River State Park, Sarasota, FL [Bookmark]

### Abstracts and Posters

**Achtemeier, Gary L.**, and Luke Naehrer. 2005. Measurements of ground-level PM<sub>2.5</sub> concentrations downwind from Southern prescribed burns. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Poster]

**Achtemeier, Gary L.** 2005. On plume rise – matching Daysmoke with Briggs Equations for industrial stacks. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Abstract]

Alahari, N., Sublette, K., Jennings, E., Thoma, G., Wolf, D., Duncan, K., **Callaham, M. Jr.**, Todd, T. 2005. Earthworms as ecoengineers in the restoration of oil and brine impacted soils following remediation. International Petroleum Environmental Conference, November 2005, Houston, Texas [Abstract]

**Callaham, M.A.**, Richter, D.D., Hofmockel, M. 2005 Long-term land use effects on soil invertebrate communities in Southern Piedmont soils. Ecological Society of America annual meeting, 8-11 August, Montréal, Canada [Poster]

**Callaham, M.A., Jr., Stanturf, J.A.**, Boerner, R.E.J. 2005. Viewing ecosystem restoration through the glass of soil ecology: Making use of the illuminated ped. Symposium Honoring Dr. David C. Coleman, 28-29 October, Athens, Georgia [Poster]

**Callaham, M.A. Jr.**, Todd, T.C., Kitchen, D.J., Blair, J.M., Williams, M.A., Rice, C.W. 2005. Long-term studies on soils and soil biology in a Kansas tallgrass prairie: Stories that only time can tell. Invited symposium presentation at the Soil Science Society of America Annual Meeting, 6-10 November, Salt Lake City, Utah [Abstract]



\*Camp, D.L., S.R. Bennett, M.A. Callaham, Jr., and P.F. Hendrix. 2006. Native and exotic earthworm effects on C and N dynamics in a growth chamber experiment. Poster Presentation at 12th Annual Ecology Student Symposium at the University of Georgia, Institute of Ecology, Athens, GA. [Published abstract]

Canfield, J.M., Linn, R., Cunningham, P., **Goodrick, S.L.** 2005. Modeling effects of atmospheric stability on wildfire behavior. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Abstract]

Cunningham, P., **Goodrick, S.L.** 2005. High-resolution numerical model simulations of fire plume dynamics. 2005. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27 Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Poster]

**DiCosty, Ralph J., Callaham Jr., Mac A., Stanturf, John A.** 2005. Atmospheric deposition and re-emission of mercury estimated in a prescribed forest fire experiment in Florida, USA. Soil Science Society of American Annual Meeting, 6-10 November, Salt Lake City, Utah [Poster]

**Goodrick, S.L.** 2005. Building historical gridded weather data sets for fire program analysis. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Poster]

**Goodrick, S.L.,** Cunningham, P. 2005. A mechanism for the formation of transverse horizontal vortices on wildland fires. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Abstract]

**Goodrick, S.L.,** Hanley, D.E. 2005. Atmospheric teleconnections and wildfires in the southeastern United States. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Poster]

Hanley, D.E., Cunningham, P., **Goodrick, S.L.** 2005. The interaction between a wildfire and a sea-breeze front. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Poster]

Linn, R.R., Canfield, J., Winterkamp, J., Cunningham, P., Colman, J., Edminster, C., **Goodrick, S.L.** 2005. Numerical simulations of fires similar to those of the international crown fire modeling experiment. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Abstract]

**Liu, Y.-Q., G. Achtemeier and S. Goodrick.** 2005. CMAQ-Daysmoke as a Smoke and Air Quality Management Technique: A Case Study of a Prescribed Burning in Georgia. In: Proceedings Sixth Fire and Forest Meteorology Symposium, October 25-27, Canmore, AB, Canada [Abstract]

**Outcalt, K.W.,** Wade, D. 2005. Response of a mixed longleaf (*Pinus palustris*) and loblolly pine (*Pinus taeda*) community to long-term dormant season prescribed burning. Ecological Society of America annual meeting, 8-11 August, Montréal, Canada [Poster]

**Outcalt, K.W.** 2005. Frequency and season of prescription fires to reduce hazardous fuel loads on the lower Piedmont of Georgia. In: Proceedings of the Annual Joint Fire Science Program Principal Investigator Workshop, November 1, San Diego, California. [Poster]

Sanchez, Felipe, Coleman, M., Garten, C.T., Luxmoore, R., **Stanturf, J.A.,** Wulschleger, S.D. 2005. Soil carbon, after three years, under short rotation woody crops grown under a range of nutrient and water availability. Soil Science Society of American Annual Meeting, 6-10 November, Salt Lake City, Utah [Abstract]

**Stanturf, J.A.,** Burbridge, P.R., Gardiner, E.S., Perdue, J.H. 2005. Disturbance in the face of climate change: Incorporating disturbance into management of coastal forests. International Workshop on the Scale of Natural Disturbances from Tree to Stand; 29 September to 1 October, Palanga, Lithuania; Lithuanian Forest Research Institute, Kaunas, Lithuania. [Abstract]



Photos from Masthead: Some of the mammals our researchers see in the woods.



Florida Black Bear  
*Ursus americanus floridanus*



Florida Bobcat  
*Lynx rufus floridanus*



White-Tail Deer  
*Odocoileus virginianus*



Coyote  
*Canis latrans*



Florida Panther  
*Felis concolour*



## Upcoming Events:

2006

Feb 6-7	4th Annual Gulf Forest Soils Conference, "Properties and Management of Mississippi River Alluvial and Loessal Soils," Battlefield Inn and Conference Center, Vicksburg, MS; contact Scott Roberts for information <a href="mailto:sroberts@cfr.msstate.edu">sroberts@cfr.msstate.edu</a>	Jun 26-28	AWRA 2006 Summer Specialty Conference, Adaptive Management of Water Resources; Missoula, MT; <a href="http://www.awra.org/meetings/Montana2006/index.html">http://www.awra.org/meetings/Montana2006/index.html</a>
Feb 8-12	Pine Rockland Conference, Miami, FL & Marsh Harbour, Bahamas; Outcalt and O'Brien to attend	Aug 6-11	Eighth International Conference on Mercury as a Global Pollutant Madison, WI; <a href="http://www.mercury2006.org/">http://www.mercury2006.org/</a> ; DiCosto to attend and present paper
Feb 27-Mar 1	Central Hardwood Forest Conference, Knoxville, TN. <a href="http://fwf.ag.utk.edu/central/">http://fwf.ag.utk.edu/central/</a>	Aug 6-11	Ecological Society of America annual meeting, Memphis, TN; <a href="http://www.esa.org/memphis/">http://www.esa.org/memphis/</a>
Feb 28-Mar 2	North Carolina Wildland Fire Symposium, Greensboro, NC; <a href="http://www.ncfirewise.org">http://www.ncfirewise.org</a>	Aug 8-10	Forest and Water in a Changing Environment Beijing, China; Chinese Academy of Forestry, Beijing Forestry University and Southern Research Station.
Mar 8-9	Wildland Fire 2006, Phoenix, Arizona; <a href="http://www.iafc.org/wildland">http://www.iafc.org/wildland</a>	Aug 22-25	5th European Conference on Ecological Restoration: "Land use changes in Europe as a challenge for restoration ecological, economical and ethical dimensions" University of Greifswald, Germany <a href="http://www.uni-greifswald.de/SER2006">http://www.uni-greifswald.de/SER2006</a>
Mar 24-25	The Seventh Eastern Old-Growth Forest Conference, Little Rock, Arkansas; pre-registration will be required. <a href="http://www.srs.fs.usda.gov/4106/meetings/EOGC2006/EOGC2006.htm">http://www.srs.fs.usda.gov/4106/meetings/EOGC2006/EOGC2006.htm</a>	Aug 28-Sep 1	IEA Bioenergy Task 29, Task 31 and Task 39, International Workshop "Biofuels and Bioenergy: Challenges and Opportunities," University of British Columbia, Vancouver Canada; <a href="http://www.ieabioenergytask31.org/">http://www.ieabioenergytask31.org/</a>
March 27-30	"Fuels Management -- How to Measure Success" conference sponsored by the International Association of Wildland Fire (IAWF), Portland, OR; <a href="http://www.iawfonline.org">www.iawfonline.org</a>	*Sep 11-14	Baltic-Scandinavian Disturbance Network annual meeting, Tromsø, Norway with field excursions to Lapland in Finland (Alta, Lakselv and Kilpisjärvi); <a href="http://www.eau.ee/~ecosyst/index.php?page=coming">http://www.eau.ee/~ecosyst/index.php?page=coming</a>
Mar 29-Apr 2	American Society Environmental History Annual Meeting, St. Paul, Minnesota; <a href="http://www.h-net.org/~environ/ASEH/conferences.html">http://www.h-net.org/~environ/ASEH/conferences.html</a>	Sep 25-28	2006 biennial meeting Short Rotation Woody Crops Operations Working Group, Red Lion Inn, Pasco, Washington; tentatively, joint meeting with Poplar Council of Canada, US Poplar Council, IUFRO Temperate Short Rotation Forestry Working Party 1.03.02, and SAF Agroforestry Working Group;
Apr 6-7	Southern Regional Conference on Forestry Technology Transfer and Science Delivery, San Antonio, Texas	Sep 25-27	UFRO Oak Silviculture Working Party (1.06) meeting, Stevens Point, WI; optional pre-conference field trip to SW WI on Sept 21-23, and optional post-conference tour to northern WI on Sept 28-30.
Apr 8-12	International Conference on Hydrology and Management of Forested Wetlands, New Bern, North Carolina; <a href="http://www.asae.org/imis/meeting/forestcall.cfm">http://www.asae.org/imis/meeting/forestcall.cfm</a>	Sep 26-19	Patterns and Processes in Forest Landscapes; Consequences of Human Management, University of Bari, Italy; IUFRO 8.01.03 Landscape Ecology; <a href="http://www.greenlab.uniba.it/events/iufro2006/">http://www.greenlab.uniba.it/events/iufro2006/</a>
Apr 19-21	17th Global Warming International Conference and Expo, Miami, Florida; <a href="http://globalwarming.net">http://globalwarming.net</a>	Oct 4-7	IUFRO and EFI International Meeting, "Ecosystem Goods and Services from Planted Forests," Bilbao, Spain; <a href="http://www.iefc.net">http://www.iefc.net</a>
May 21-24	Challenges in Coastal Hydrology and Water Quality, Baton Rouge, Louisiana; <a href="http://www.cee.lsu.edu/facultyStaff/Singh_Ve_jay/index.html">http://www.cee.lsu.edu/facultyStaff/Singh_Ve_jay/index.html</a>	Oct 10-13	Conference on "Sustainable Forest Management with Fast Growing Plantations", Charleston, SC; contact Dave Wear <a href="mailto:dwear@fs.fed.us">dwear@fs.fed.us</a>
*May 31-Jun 2	Workshop on "Critical Processes and Properties Regulating Carbon Cycling in Southern Forests," Southern Forest Research Partnership, Asheville, NC; <a href="http://sfrponline.net/events.htm">http://sfrponline.net/events.htm</a>	Oct 25-29	Society American Foresters Annual Meeting, Pittsburgh, PA
Jun 3-8	12th International Symposium on Society and Natural Resource Management, Vancouver, BC, Canada; <a href="http://www.issrm2006.rem.sfu.ca">http://www.issrm2006.rem.sfu.ca</a>	Oct 23-27	Knowledge management in forestry conference, sponsored by KnowForAlp, hosted by Forest Research Institute Baden Württemberg, Freiburg, Germany
Jun 5-9	Fourth International Poplar Symposium, "Meeting the Needs of a Growing World through Poplar and Willow Science: Combining Traditional and Novel Approaches in the Genomic Era," Nanjing, China, IUFRO Poplar and Willow Working Party 2.08.04; <a href="http://ips2006.njfu.edu.cn/">http://ips2006.njfu.edu.cn/</a>	Nov 12-16	Soil Science Society of American Annual Meeting, Indianapolis, IN; <a href="http://www.indy.org">http://www.indy.org</a>
Jul 18-20	Advances in Threat Assessment and Their Application to Forest and Rangeland Management, Boulder, Colorado; <a href="http://www.forestencyclopedia.net/encyclopedia/threats">http://www.forestencyclopedia.net/encyclopedia/threats</a>		
Jul 9-15	18th World Congress of Soil Science, in Philadelphia, PA <a href="http://www.18wcss.org">http://www.18wcss.org</a>		



## Upcoming Events:

Nov 13-17 3rd International Fire Ecology and Management Congress, San Diego, CA; <http://emmps.wsu.edu/firecongress/>

**2008**

Nov 5-9 Society American Foresters Annual Meeting, Reno, NV.

**2007**

Feb 26-Mar 1 14th Biennial Southern Silvicultural Research Conference, Athens, GA;

Summer 6th North American Forest Ecology Workshop, to be held in British Columbia

Oct 24-28 Society American Foresters Annual Meeting, Portland, OR.

Nov 4-8 Soil Science Society of American Annual Meeting, New Orleans, LA; <http://www.neworleanscvb.com>



# GPRA



# GPRA



## *GPRA -Accomplishment*

Category	FY 2004 Total	FY 2005 Total	FY 2006 To Date
Number of Refereed Journal Publications	20	21	12
Number of Non-Refereed Publications (include abstracts)	89	60	29
Number of Publications (refereed + non-refereed)	109	81	41
Number of Tours	41	40	18
Number of Short Courses/Training	20	13	9
Number of Invited Presentations to Scientific Organizations	12	7	11
Number of Invited Presentation to Lay Organizations	30	32	20
Volunteer Presentations to Scientific Organizations (non-GPRA	42	50	15
Number of Technology Transfer Activities (other than above)	105	132	51
Outside Funding	\$2,610,574	\$3,688,734	\$1,754,000

## SRS-4104 Project Leader's Report

John Stanturf - Editor Lynne Breland - Technical Writer  
Patricia A. Outcalt - Production, Design and Layout

